



U.S. Department of Energy
Energy Efficiency and Renewable Energy

DATA CENTER ENERGY EFFICIENCY TRAINING

Incentives and Government Programs



<Presenter>



PG&E: Data center offerings pre-2006

- Audits, incentives that addressed cooling systems only:
 - High-efficiency equipment (chillers, pumps, fans, etc.)
 - VFD's
 - Air- and water-side economizers ("Free Cooling")
- What we were missing:
 - Anything having to do with operations "inside the white room"



PG&E: New initiatives in 2006

- Incentives for energy-efficient computing equipment (Rip & Replace only)
- Incentives for virtualization/consolidation
- Incentives for airflow control systems
- Incentives for high efficiency UPS and power distribution systems
- High quality technical services for cooling system evaluation (retrofit and new construction)
- 80 Plus for personal computers (upstream incentive)
- Premium efficiency LCD monitors (midstream incentive)



PG&E: New/Coming in 2007

- ▶ Focus and incentives on efficient data storage technologies (just announced: MAID)
- ▶ Retro-commissioning program for airflow management
- ▶ Extension of 80+ program to data center computing equipment
- ▶ Rebates for PC management software (Now)
- ▶ Incentives for conversion to thin-client systems



PG&E: Initiatives in development

- Incentives for energy efficient servers (new installations)
- 80 Plus/CSCI program for computing equipment (servers, networking gear, storage systems)
- Rebates for virtualization/server consolidation
- Incentives/rebates for conversion to thin-client systems



PG&E: Results & utility industry leadership

- Industry agrees that a third to a half of data center energy use can be addressed through cost-effective, reliable energy efficient technologies and strategies
- PG&E achieves 4x of goals in 2007; looking for tens of MW of reduction per year starting in 2008
- PG&E announces formation Utility IT EE Coalition to extend program adoption across US and Canada



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Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Incentives and Government Programs

Southern California Edison (SCE) Incentive Programs





High efficiency server incentives

Energy savings and PG&E incentive for installation of three new High Efficiency Servers.

	Baseline Usage	Installed Usage	Energy Savings	Electric Cost Savings	PG&E Incentive	Incremental Installation Cost
	kWh/yr	kWh/yr	kWh/yr	\$/yr	\$	\$
Install High Efficiency Servers - Direct Energy Savings	24,538	4,941	19,598	\$ 2,352	\$ 1,960	n/a
Install High Efficiency Servers - Indirect HVAC Savings	9,003	1,813	7,190	\$ 863	\$ 1,007	n/a
Combined	33,541	6,753	26,788	\$ 3,215	\$ 2,967	n/a



Server virtualization incentives

- Energy savings and PG&E incentive for Server Virtualization.
- Number of servers before virtualization: 50.
- Number of servers after virtualization: 30.

	Baseline Usage	Installed Usage	Energy Savings	Electric Cost Savings	PG&E Incentive	Total Installation Cost
	kWh/yr	kWh/yr	kWh/yr	\$/yr	\$	\$
Install Virtual Server - Direct Energy Savings	98,550	59,130	39,420	\$ 4,730	\$ 3,154	\$ 70,000
Install Virtual Server - Indirect Equipment Support Savings	60,636	36,382	24,254	\$ 2,911	\$ -	\$ -
Combined	159,186	95,512	63,674	\$ 7,641	\$ 3,154	\$ 70,000



Thin clients incentives

- Energy savings and PG&E incentive for implementation of a Thin Client network.
- Replace 50 generic workstations with 50 Thin Client terminals.

	Baseline Usage	Installed Usage	Energy Savings	Electric Cost Savings	PG&E Incentive	Total Installation Cost
	kWh/yr	kWh/yr	kWh/yr	\$/yr	\$	\$
Install Thin Client Computers - Direct Energy Savings	35,040	15,626	19,414	\$ 2,330	\$ 1,553	\$ 25,000
Install Virtual Server - Indirect HVAC Savings	12,856	5,733	7,123	\$ 855	\$ -	\$ -
Combined	47,896	21,359	26,537	\$ 3,184	\$ 1,553	\$ 25,000



MAID incentives

- Energy savings and PG&E incentive for installation of a MAID system.
- Install one fully-loaded MAID cabinet with a total storage capacity of 448TB in lieu of a traditional cabinet of the same capacity.

	Baseline Usage	Installed Usage	Energy Savings	Electric Cost Savings	PG&E Incentive	Incremental Installation Cost
	kWh/yr	kWh/yr	kWh/yr	\$/yr	\$	\$
Install Maid System - Direct Energy Savings	278,450	75,118	203,332	\$ 26,551	\$ 16,267	\$ 224,000
Install Maid System - Indirect HVAC Savings	102,163	27,561	74,602	\$ 9,742	\$ 10,444	\$ -
Combined	380,613	102,679	277,934	\$ 36,293	\$ 26,711	\$ 224,000